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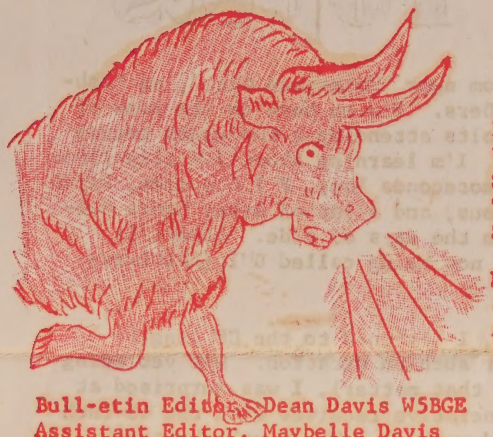

BULL-ETIN

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Treasurer Bob Baldwin WB5MCJ
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Meets first and third Fridays at 7:30PM at the Red Cross Building, 90 Brees St. ALL who have an interest in amateur radio are cordially invited to attend.

Bull-etin Editor, Dean Davis W5BGE
Assistant Editor, Maybelle Davis Circulation Manager, Bob Via WB5FDT

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Letters to editor should be addressed - 1518 San Antonio, Texas Zip 78201.

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WRIGHT WORD

By K5CDT Jim Wright

First, I want to express my appreciation to the membership for the confidence which you have shown in me by electing me to serve as your president for a second year. I hope that by all of us working together, the coming year will be the most successful ever.

Amateur radio is enmeshed in an unequaled period of expansion brought on by the CB craze. We can see it most dramatically in the demand for code and theory classes and the sudden upsurge in the number of newly issued WB callsigns on all of the bands, particularly Two Meter FM. If you don't believe there is an explosive increase in our numbers, just listen to the 80 and 40 Meter novice bands. What with all of the new novices and the technicians building their code speed, I found it almost unbelievable.

I urge each of you to be alert for those you know, particularly those introduced to radio communications via the Citizens Band, who express an interest in broadening their horizons by entry into the world of amateur radio. Bring them to our club meetings, help them to practice the code, answer questions, do whatever you can to encourage them and show them the proper way to do things. If you don't know someone who is interested, sign up with Bob Baldwin WB5MCJ for the buddy program. He will give you the name of someone in your area of town who will need a guiding hand.

The challence has been extended. The question is whether the high quality exhibited by amateurs in the past will be maintained or whether our service will deteriorate to such an extent that the FCC will curtail or eliminate our activities. It is up to each of us.

73, Jim K5CDT.

"LASERS-The Promise in a Beam of Light"

Have you ever stopped to think how your voice got from one end of a telephone to your friend at the other end? Your answer might be that your voice travels along the telephone lines, or what is often referred to as the "twisted pair". For as long as most of us can remember the "twisted pair" was two copper wired twisted together. Well, now, in some areas of this country, the twisted pair has been replaced and one actually is talking on a beam of light.

Our November program (19 Nov.) will give us all a chance to see (and hear) one of the new means of communication for the future. David Jent, WA5ZRB, and Robert Reed WB5RJU, from Southwestern Bell will present a program titled "LASERS - The Promise in a Beam of Light". In addition to demonstrating LASER communications, Dave and Bob have planned to give us the opportunity to walk through walls and other people!! How can you do that? Well, come on down to the meeting 19 November and find out. It should be a good one.

Also, don't forget the upcoming Newcommers Night, 21 January, 1977, and Oldtimers Night, 18 February, 1977. They are always sell-out crowds. (Holography--that's the answer).

de George James WB5LDN.

Technical Topics

By W5LFM Cal Graf

This month's column is coming to you from near "Watergate City", as Washington, D. C., is known by the local CBers. I'm up here in the land of the Washington Redskins and Baltimore Colts attending a two-month course on how to care for and feed a computer. I'm learning about J-K flip-flops, assertions, negations, TL1 timing pulse is 400 nanoseconds long, F I A cycles, fetch cycles, inhibit write lines, "don't care" situations, and a lot of other Boole (algebra, that is). Ah, the abacus was so simple in the days of olde. School is close to Friendship (Baltimore) airport, which is now being called BWI (Baltimore-Washington International).

On the way up from San Antonio in the '67 Mustang, I listened to the CB gang by using a 10-year old walkie-talkie I saved just for such an occasion. Not yet being converted to a 2-meter mobile (or any mobile, for that matter), I was surprised at the receiving range I could get on the super-regenerative receiver with the 40-inch whip laying on the dash (about 8 miles by the road marker). The 9-volt battery lasted the 3-day drive up. When I got here I heard about a modest cost CB converter so I picked one up and now I'm a dyed in the cotton CB listener in the mobile mode. I would estimate that on the way up (1600 statute miles), 90 per cent of the traffic passed me up while I was averaging 55-60 mph. Estimating that one car passed me every 2 minutes, there were 900 cars that whizzed past me going 70-90 mph. They were all equipped with CB radios and I saw 3 smokies giving out tickets in 3 days' driving. It's hard to rationalize the CB concept which allows a Federally-licensed radio station to be used to circumvent other legal law enforcement agencies which are trying to enforce another Federal law--the 55 mph speed limit.

There is no doubt that the CB craze is here to stay, and the radio amateur ranks should finally benefit from the influx and enthusiasm of the young and old flocking to radio as a result. The SARC is wise to hand out the listen, like, and learn lamp of amateur radio through its code and theory classes, working displays at shopping malls, radio stores, auto rallies, etc. As time goes by, there will be many amateurs joining the ranks of the CBers. Think what would happen to the ranks of the amateur if just 5% of the CBers joined them (we'd double)! And remember, encroachment on amateur bands will occur if we don't increase our ranks substantually in the next 5 to 10 years.

While using the Humbug (diode detector, audio amp) in the motel room, I found out that there are a number of 2-meter repeaters in the Baltimore-Washington area. One of them is located about 200 feet from the motel on a 100 foot microwave tower and is the Jessup, Md., repeater WR3ADZ.

The area is radio active (TV, that is) and I can receive Washington or Baltimore stations on 7 VHF stations (Ch-2, 4, 5, 7, 9, 11, 13) and 6 UHF stations (Ch-14, 20, 22, 26, 45, 53). It's nice to see the Dallas Cowboys winning on 3 channels at once! Speaking of TV, if you watch your TV set closely and adjust the vertical sync so you can see the top of the video frame, you will observe a one-second time tick. This tick is sent out only on network shows originating in New York and I have observed it only on the CBS network. The one-second time tick is part of a complex time and frequency netowrk (tied in with Nat. Bur. Stand.) which is capable of delivering time and frequencies approaching 10 to the 11th or 12th with the proper decoding equipment connected to the TV set. As seen on the TV screen, the pulses are one line high and are about one-fourth inch long with about 20 of them spread across the screen, flashing on and off at different rates.

Some time back, SARC members asked that I show them models of gidgets and gadgets and <u>then</u> write about them. So I did that on the <u>Powerlarm</u> (a device to buzz you awake when there is a power failure) and you'll see it next in a forthcoming issue of CQ magazine (don't get caught napping!) One other such device was a light sensitive audio oscillator and it appeared in the 5 Aug 76 issue of EDN. That article also won best of issue award and a savings bond (hear the light?).

We think of punched cards as being something recent, of the computer world (do not fold, spindle or mutilate), but they were first demonstrated by Jacques Bouchon in 1725. And all along Roy Albright W5EYB thought he invented the punched card when he stomped on his golf score card with his spiked heels back in naught 36! That's the bad news. Now for the good news for those in S.A. I saw one store that had a Pearl six-pack at $2.25, and Coors goes at $2.99 a six-pack (avg. is $1.65). Now <u>that</u> would be rough on Field Day! All for now from "Watergate City" and "Ballmore."

Regards.

Cal Graf W5LFM

S.A. RADIO CLUB

CQ ALL S A AREA AMATEURS !
The San Antonio Radio Club
Annual Christmas Dinner-Dance
Will be Sat., Dec. 4 at the
Arden Grove Party House, 102 Ninth St.

TICKETS for DINNER-DANCE are $7.50 per person

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BOB	W5PKK	695-8430
DEAN	W5BGE	735-1622
BILL	WA5QHG	S.A. College

SATURDAY, DEC. 4

CLAY COMMENTS

PRESCALERS FOR FREQUENCY COUNTERS

By W5ZPV Clay Laster

Many amateurs have been able to acquire a frequency counter for the ham shack in order to perform accurate frequency measurements on transmitters and other equipment. Some of these frequency counters reflect modern solid state technology and can count frequencies in the High Frequency range up to about 25 MHz to 30 MHz. A few of the counters will count higher up in the VHF frequency range of 200 MHz to 300 MHz. Amateurs who own these high speed counters have an excellent tool for two meter measurements. However, many own an old, obsolete counter which in some instances will count only up to about 100 KHz or 1.0 MHz. The use of a prescaler with these counters will extend the frequency range to 10 MHz or more, depending on the performance of the counter and the prescaler.

The basic design of a prescaler involves the use of high speed counters to "count down" the incoming signal frequency to a lower multiple frequency which is acceptable by the counter. The use of conventional TTL integrated circuit chips, such as the SN7490 Decade Counter, will accept frequencies of up to about 20 MHz to 30 MHz. A special, high-speed version of the SN7490 is available from some distributors which will operate up to about 35 MHz. Each decade counter will divide the incoming frequencies by a factor of ten. Thus, a 3.850 MHz signal would be reduced to a 0.3850 MHz (or 385.0 KHz) for input into the counter. If two SN7410 decade chips were used in series, then the incoming frequency would be reduced by a factor of 100 to 1. Considering that the SN7490 costs only about one buck, such a prescaler would be an inexpensive but valuable addition to the ham shack.

More expensive IC chips are available which will count frequencies in the 100 MHz to 500 MHz range. For example, two Fairchild ECL-9528 dual flip-flop chips can be wired to form a decade prescaler which can count up to about 175 MHz. This chip uses emitter-coupled logic (ECL) which is considerably faster than the conventional TTL logic. Daniel Meyer (1) describes a 175 MHz prescaler which uses these chips. Another IC chip which has been used for prescaler applications is the Fairchild 95H90 ECL device which operates up to 300 MHz. Irving Math (2) describes a 300 MHz prescaler using this chip. The Plessey Semiconductor Products, based in Great Britan, offers high speed frequency dividers which will operate up to 1000 Mhz. One of their devices, the SP8685A, is a decade counter which will count up to 500 MHz. The cost of these devices is unknown, however, it is believed that they will cost many times that of the standard SN7400.

A block diagram of a prescaler is given in Figure 1. For many applications, a preamplifier is needed to raise the amplitude of the incoming signal to a level which

(Continued on Page 5)

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(Clay Comments - Continued from Page 4)
will "toggle" the decade counter. If a SN7400 decade chip is used, then the incoming signal amplitude required is approximately 2.5 to 4 volts. For many ham solid-state circuits, signal amplitudes of this magnitude are not available. A wide-band preamplifier can be made available which will accept signal amplitudes of 10 to 100 millivolts.

In the next part of this series, we will explore some of the prescaler designs which are available to amateurs.

References: (1) Meyer, Daniel, "Build a 175-MHz Prescaler", Popular Electronics, April 1972.

(2) Math, Irwin, "Maths Notes", CQ, May 1975.

73, Clay Laster E5ZP

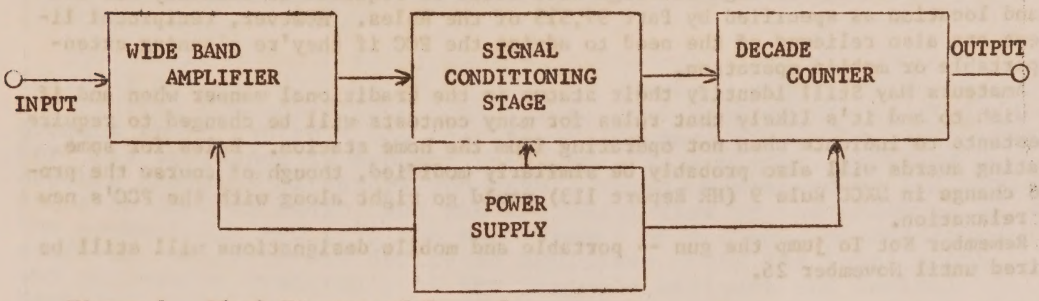

Figure 1. Block Diagram of Prescaler.

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DUES RENEWAL NOTICE

Did you receive your dues renewal notice? Even if you had already paid your 1977 dues, we still need the information form returned to us. This enables us to assure that not only will you receeve the BULL-ETIN, but will help us bring our records up to date. It is hoped that an accurate club roster can be published in the near future. If no dues notice or info form was received by you, please contact Bob Baldwin WB5MCJ, SARC Treasurer. Your prompt attention to this matter will be greatly appreciated. 73, Jim K5CDT. SARC President

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BUDDY-ELMER SYSTEM

Bob Baldwin WB5MCJ is heading up a program to insure that new amateurs in the San Antonio area will have an "ELMER" to call when they need help in setting up an amateur station or in trying to locate used amateur equipment. This buddy system will insure that the newcomer to the world of amateur radio will be able to get that extra bit of help which is often required to get started. Remember when you were able to get some help from an amateur? Now is the time you can pass on that favor and help the newcomer. Call Bob at 734-6148 and volunteer your services. Both QST and 73 have reported that many clubs throughout the country are beginning to provide this service. The present Code and Theory Classes will soon provide many new novices.

-...- -...- -...- -...- -...- -...- -...- -...- -...-

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"NEW HAM NEWS" is a new quarterly ARRL publication that will be sent free to every newly licensed Amateur. Each newcomer will receive two free issues, and any who joins the League will continue to receive New Ham News for his first two years as an Amateur. It'll also be distributed to students in Novice training courses. Volume I Number I consists of eight pages of news items of particular interest to newcomers, reprints of several appropriate short QST articles. Looks like an effective idea. de HR REPORT.

BALLOTS FOR ARRL ELECTIONS are due in Newington before November 20 if they're to count.

AMATEUR RADIO CLASSES

The N.W. YMCA, in connection with the San Antonio Radio Club, will sponsor Novice Code & Theory classes at both the N.W. YMCA and the Lackland AFB Area YMCA, beginning 9 Nov. 1976. Each class will be 10 weeks in duration, 6:30 to 9:30 PM on Tuesdays, and will cost $25 per person. For more information call the N.W. YMCA at 735-9231.

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F R O M H R R E P O R T

"MOBILE 6" AND "PORTABLE 3" will no longer be required after Nov. 26--the FCC acted on Docket 20686 last week and agreed that the requirement for Amateurs to indicate portable or mobile status is not useful to the Commission and should be dropped. Another deregulatory change, the dropping of the requirement that the FCC be notified prior to an extended period of operation away from the licenses premises, was also adopted.

The one exception to the rule change dropping the requirement to sign portable or mobile applies to reciprocal licensees -- a foreign Amateur operating in the United States with his foreign callsign will still be required to identify his status and location as specified by Part 97,313 of the Rules. However, reciprocal licensees are also relieved of the need to advise the FCC if they're planning extended portable or mobile operation.

Amateurs May Still identify their status in the traditional manner when and if they wish to and it's likely that rules for many contests will be changed to require contestants to indicate when not operating from the home station. Rules for some operating awards will also probably be similarly modified, though of course the proposed change in DXCC Rule 9 (HR Report 113) would go right along with the FCC's new rule relaxation.

Remember Not To jump the gun -- portable and mobile designations will still be required until November 26.

"N" PREFIXED TWO LETTER CALLS will be available to any Amateur eligible for a 1x2 callsign starting November 2. With the recent release of "X" suffixed 1x2s, the new prefix increases the pool of 1x2s available in each district by 676. This should be more than enough to take care of demand through the end of the year, but when all those who became Extras before July 2, 1974 become eligible January 1 demand may well exceed supply in the more populous call areas again.

The Release of "N" Prefixes applies only to 1x2 callsigns at this time, though presumedly the "N" prefix will also continue to be available when requested for special events stations.

CW COMPREHENSION TESTS for Amateur exams should come into use shortly. Master tapes, test questions and procedures were put in final shape some time ago so only duplication, distribution and field office training remain before the new procedure can become adopted. Target date now looks like January 1.

10 AND 15 METER DXERS should check about 28.1 and 21.1 for DX goodies. Some very juicy prefixes have been working the Novice segments, both to give the newcomers a chance and to escape pileups usually drawn on lower parts of bands.

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NEW CALLBOOKS FIRST OF NOV-NEW ARRL HANDBOOKS MIDDLE NOV.

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NEWS AND VIEWS FROM THE WEST GULF DIVISION DIRECTOR, ARRL

As we go to press with this issue of the bulletin, on the day following our national elections, we find a number of disturbing events occupy our thoughts. Foremost, we learn that only some 52% of us bothered to exercise the right our forefathers struggled so long to bequeath us, the right to vote and express our opinion.

It is indeed difficult to understand this tremendous exhibition of apathy in a matter which can so profoundly affect our lives, and the future of generations to come. When we view the razor-thin margins deciding the contest results in so many states, it becomes very obvious that every vote is important. We wonder how the non-voting citizens will feel in the future, should the recent election results create events contrary to their desires!

Closer to home perhaps, we wonder what percentage of ARRL members voted, or will vote, in the director/vice director elections in our division this year. Experience indicates we can expect approximately the same percentage mentioned above, a scant majority. Yet, my eight years experience as your director has demonstrated to me at least, the great need to select highly qualified persons to represent us at the national level.

The American Radio Relay League is our only national organization. Properly administered it is capable of exerting great influence with the Federal Communications Commission, that body of the federal government which controls the destiny of Amateur radio. The capability for this influence is brought about by: (1) a highly qualified and capable board of directors who have a broad understanding and experience in Amateur radio, and who are responsive to the thinking of the membership, and (2), the maintenance of a League headuqarters staff of qualified and dedicated employees under the intelligent and aggressive leadership of the league's officers and General Manager.

Recent events, in preparation for WARC '79 have demonstrated to a marked degree the efficacy of the latter. ARRL General Manager Dick Baldwin's assumption of leadership, and his generous staff support of the FCC Task Force organization have made an outstanding contribution toward expeditiously finalizing the Amateur position, as submitted in the Report of the WARC Advisory Committee for Amateur Radio. It is believed that report will have favorable impact on the formulation of the U.S. position for WARC '79. It would have been very difficult for the FCC to have met the deadline for the report without the League's support.

Now lets do our part by voting, and electing qualified individuals to represent us, in the positions of director and vice-director.

* * * * * * * * *

Amateur radio is now experiencing a period of fantastic growth. We have record of more than 26,000 students currently in our code and theory classes. Most of these will soon be licensed Novices, and thousands more to come. This naturally raises the question of where to put this horde of newcomers. Most certainly we are not going to get any more frequencies before 1979, and possibly not then.

There is no practical way to determine how many new Amateurs we can accomodate in our bands. However, several facts are obvious. The explosive growth of FM repeater use within the past few years has significantly relieved the pressure on 40 and 80 meter frequencies. Since so many thousands have found FM repeater operation satisfies their operating pleasure, we can accomodate many new ops therein.

While it probably would be better for Amateur radio if newcomers would spend time on HF, in order to develop a broad base of knowledge, it can be assumed that a very great percentage will gravitate to VHF as soon as their license and regulations permit. Under these circumstances it can be assumed we can accomodate at least twice as many Amateurs as are now licensed.

Most certainly the space is available on VHF. We have 4,000 Khz on six meters, and 5,000 Khz on 220! This indeed is happy hunting ground for the experimentally inclined, and a real boon for those who have a yen for a private channel.

Activity on six is growing rapidly. The Six Meter International Radio Klub has over 1500 members in the U.S. Most on SSB. Also, the number of 6-meter FM repeaters is increasing.

The occupancy on 220 is increasing at a fantastic rate, expecially in Southern California where 30 220 Mhz repeaters are operational. We can expect to see similar trends in other parts of the country. Incidentally, to get us into orbit, 222.5 Mhz has been accepted as the prime simplex frequency for this band.

The growth of Amateur Radio brings to mind another problem: "What kind of Amateurs are these newcomers? Are they motivated to meet the quqlifications for radio Amateurs as specified by paragraph 97.1 of FCC regulations, or do they simply desire the privilege of free radiotelephone service on Amateur frequencies?" This should be a matter of great concern to us, since it is our frequencies that would be in jeopardy should they fail to meet our traditional standards. It might be well to mention the five purposes for our existence referred to in the regulations came into being by the way we Amateurs chose to conduct our activities, rather than by bureaucratic fiat. They are noble objectives, let us continue to observe and protect them, to insure our survival.

We've all heard the expression: "As the twig is bent, so grows the tree." For several years, our League president, Harry Dannals, W2HD, has advocated a buddy system, whereby each new Amateur is assigned a mentor, or sponsor, who will assist and guide the beginner until he upgrades from Novice. This indeed is a noteworthy concept, and offers us an opportunity to insure that our new members' footsteps are guided in the right direction. We would recommend the guidance be fatherly and instructional, but firm. Let's give it a try. Too often one hears Novices outside their authorized frequencies; too often with key clicks; and when they go on fone, too often using improper procedure or ungentlemanly conduct.

* * * * * * * * * * * *

A reminder - The 1977 West Gulf Division ARRL Convention will be held in Austin, sponsored by the Austin Amateur Radio Club.

In 1978, the combined El Paso and Sun City Amateur Radio Clubs, both of El Paso, will sponsor the convention in that city.

These meetings are important to Amateur radio. They are more than a hamfest. Officials from headquarters will be present. This gives each of us an opportunity to express our views directly to a member of the staff. Plan to attend both. Austin and El Paso are unique cities, and have a lot to offer visitors. Incidentally, ARRL president Dannals will be at Austin.

* * * * * * * * * * * *

Most likely, since I am not a candidate for re-election as director of the West Gulf Division, this will be my final opportunity to address you in an official capacity through the medium of this bulletin. Let me say the past years have been a mixture of pride and frustration. Pride, because of the magnificent confidence you have bestowed upon me, and pride because so many of you have become good friends of Mrs. Albright and myself. But, frustration because I have not always succeeded in attaining objectives we deemed necessary or desirable for Amateur radio.

Perhaps the future will give me a new perspective, and perhaps, ¿quien sabe? it will present another opportunity to give back to Amateur radio more of the knowledge and experience gained during the past half century.

So, hasta la vista, y vaya con Dios.

Roy Albright
W5EYB

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